

Ollscoil na hEireann, Gaillimh
National University of Ireland, Galway

SUMMER EXAMINATIONS 1999

SECOND CIVIL ENGINEERING EXAMINATIONS

ELEMENTARY THEORY OF STRUCTURES

Professor A. Cusens;
Professor P. E. O Donoghue

Time allowed: **two** hours

Attempt **all** questions

1. Find the forces in all the members of the pin-jointed truss shown in Figure 1.

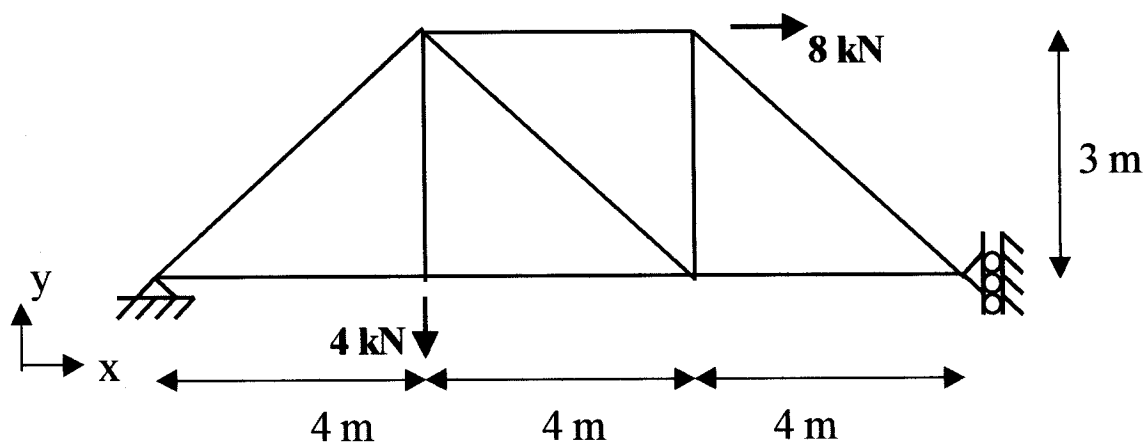


Figure 1

2. Relative to the bottom left hand corner, find the location of the centroid for the lamina shown in Figure 2 (all dimensions in mm). Region A corresponds to a circular cut-out of radius 100 mm.

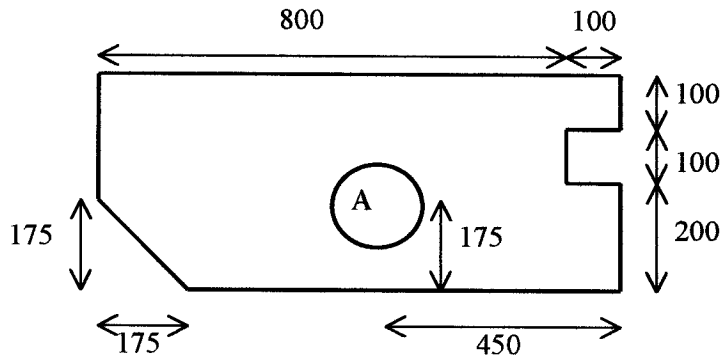


Figure 2

3. Draw the shear force and bending moment diagrams for the structure shown in Figure 3.

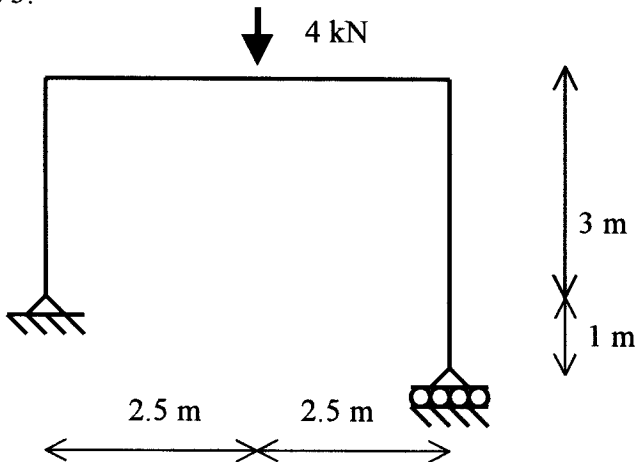


Figure 3

4. Draw the shear force and bending moment diagrams for the three pinned frame shown in Figure 4.

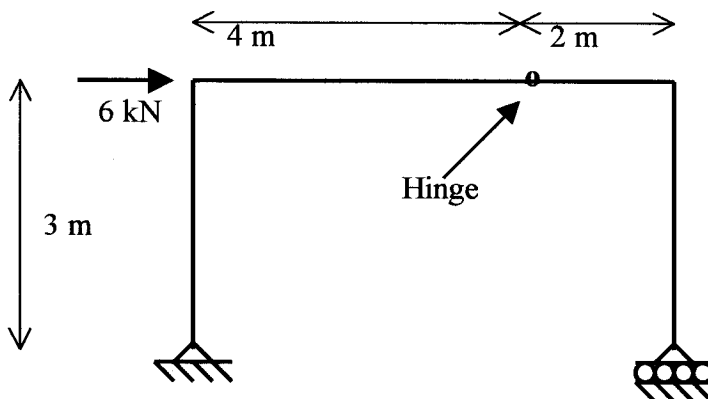


Figure 4